

Amendment and Response

Applicant: Christian Birzer et al.

Serial No.: 10/588,401

Filed: May 11, 2007

Docket No.: I431.167.101/FIN575PCT/US

Title: SEMICONDUCTOR DEVICE HAVING A CHIP STACK ON A REWIRING PLATE

REMARKS

The following remarks are made in response to the Non-Final Office Action mailed August 6, 2008. Claims 24 and 25 have been withdrawn from consideration. Claims 1-10 have been cancelled without prejudice. Claims 11-23 and 26-32 were rejected. With this Response, claims 11, 19, and 26 have been amended, and claims 33- 36 have been added.. Claims 11-23 and 26-36 remain pending in the application and are presented for reconsideration and allowance.

Claim Rejections under 35 U.S.C. § 103

Claims 11-23 and 26-32 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pub. No. 2003/0122237 to Saeki ("Saeki") in view of U.S. Pat. No. 6,018,462 to Sakuyama.

Applicants respectfully submit neither Saeki nor Sakuyama, either alone or in combination, teach or suggest the present invention as defined by independent claim 11.

The Office Action admits that Saeki fails to teach or suggest **a common external contact**, but concludes that such a teaching would be obvious in view of Sakuyama. With reference to Figures 1 and 2, Sakuyama describes an electrode pad 4 having divisional pads 4a to 4d which are electrically connected by a metallic bump 9. However, unlike **each of the individual external contact area regions being assigned to a different one of the individual semiconductor chips**, as defined by independent claim 11, each of individual divisional pads 4a-4d of Sakuyama is not assigned to a different one of the bare tips 6a, 6b, and 6c. Instead, with reference to Figure 1, two of the individual divisional pads of electrode pad 4 are assigned to electrode terminals 7 of bare tip 6a. It is not clear from Figure 1 whether the remaining individual divisional pads of electrode pad 4 are separately assigned to bare tips 6b and 6c, or whether they are assigned to a same one of the bare tips 6b and 6c. Thus, at least two of the individual electrode pads of electrode pad 4 are assigned to a same bare tip.

In view of the above, Sakuyama fails to teach or suggest **each of the individual external contact area regions being assigned to a different one of the individual semiconductor chips in the semiconductor chip stack**, as defined by independent claim 11. Since the Office Action

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admits that Saeki does not disclose **a common external contact**, and since Sakuyama fails to teach or suggest **each of the individual external contact area regions being assigned to a different one of the individual semiconductor chips in the semiconductor chip stack**, Applicants submit that one cannot combine the teachings of Saeki with those of Sakuyama and arrive at the present invention as defined by independent claim 11.

Additionally, since, as the Office Action correctly states, Saeki fails to disclose a common external contact, Saeki also fails to teach or suggest **the individual external contact regions of the external contact area being electrically connect via a common external contact**, as defined by independent claim 11. With reference to Figures 1-3 of Saeki, semiconductor chips 10 and 20 are individually electrically accessible via ball pads 33 and associated solder bumps 35 on the bottom surface of substrate 30, the balls pads 33 being spaced far apart from one another so as to remain electrically separate. An advantage of common external connection 9 as described by Sakumaya only occurs for circuits in which semiconductor chips are electrically connected to one another. The Saeki device does not teach a circuit arrangement in which semiconductor chips 10 and 20 are electrically connected to one another. As such, there would be no reason to combine the teachings of Sakuyama with those of Saeki, since modifying the arrangement of Saeki so as to electrically connect semiconductor chips 10 and 20 to one another would result in the semiconductor device of Saeki no longer functioning as desired.

In view of the above, it is not obvious to modify the teachings of Saeki with those to Sakuyama to arrive at the present invention as defined by independent claim 11. As such, Applicants submit that independent claim 11 is non-obvious in over Saeki in view of Sakuyama, and respectfully request that the rejection of independent claim 11 under 35 U.S.C. 103(a) be withdrawn and that independent claim 11 be allowed.

Independent claims 19 and 26 include limitations similar to those described above with respect to independent claim 11. As such, for at least reasons similar to those described above with respect to independent claim 11, Applicant submits that independent claims 19 and 26 are also non-obvious over Saeki in view of Sakuyama, and respectfully request that the rejection of

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independent claims 19 and 26 under 35 U.S.C. 103(a) also be withdrawn and that independent claim 19 and 26 be allowed as well.

Claims 12-18 further define patentably distinct independent claim 11, claims 20-23 further define patentably distinct independent claim 19, and claims 27-32 further define patentably distinct independent claim 26. As such, Applicants respectfully submit that the rejections of dependent claims 12-18, 20-23, and 27-32 under 35 U.S.C. 103(a) also be withdrawn and that dependent claims 12-18, 20-23, and 27-32 be allowed as well.

Claim Rejections under 35 U.S.C. § 103

Claims 33-36 have been added, with claim 33 being an independent claim and claims 34-36 depending therefrom. Neither Saeki nor Sakuyama teach or suggest an off-set stack configuration of semiconductor chips as defined by independent claim 33. As such, Applicants respectfully submit that independent claim 33 is in form for allowance over the art of record.

Since claims 34-36 dependent from and further define independent claim 33, Applicants submit that dependent claims 34-36 are also in form for allowance over the cited reference.

As such, allowance of added claims 33-36 is respectfully requested.

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CONCLUSION

In view of the above, Applicant respectfully submits that pending claims 11-23 and 26-36 are in form for allowance and are not taught or suggested by the cited references. Therefore, reconsideration and withdrawal of the rejections and allowance of claims 11-23 and 26-36 is respectfully requested.

No fees are required under 37 C.F.R. 1.16(h)(i). However, if such fees are required, the Patent Office is hereby authorized to charge Deposit Account No. 50-0471.

The Examiner is invited to contact the Applicant's representative at the below-listed telephone numbers to facilitate prosecution of this application.

Any inquiry regarding this Amendment and Response should be directed to Steven E. Dicke at Telephone No. (612) 573-2002, Facsimile No. (612) 573-2005. In addition, all correspondence should continue to be directed to the following address:

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Respectfully submitted,

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Date: November 6, 2008

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